Initials [redacted] Date 4/4/96

SOLID WASTE PROGRAM ROUTE SLIP

	Initial / Date
☐ **NEW APPLICATION**	
Jim W.	
Jon D.	
Proof	
Cathy	
Roger	
☐ **NEW LICENSE**	
Jim W.	
Jon D.	
Proof	
Carol	
Cathy	
Roger	
☐ **HEALTH OFFICER CARD**	
Jim W.	
Carol	
Cathy	
_____	
☐ **INSPECTIONS**	
Pat C.	
Jon D.	
Proof	
Carol	
Roger	
☐ **INTERIM CLOSURES**	
Jim W.	
Jon D.	
Proof	
Carol	
Cathy	
Roger	
☐ **CLOSURES**	
Jim W.	
Jon D.	
Proof	
Carol	
Cathy	
Roger	
☐ **CHANGE IN LICENSE FOR FEE STATUS**	
Jim W.	
Jon D.	
Proof	
Cathy	
Roger	
☐ **COMPLAINTS**	
Pat C.	
Jon D.	
Proof	
Roger	
Carol (filing & DBase)	
☐ **GENERAL CORRESPONDENCE**	
Pat C./Jim W.	
Jon D.	
Proof	
Roger	
☑ **MISCELLANEOUS** Cord Letter	
Proof	Tom 4-4-96
Pat C	Proof 4/4-96
Jon D	JD 4/4/96
Roger I	PCS 4/5
Mail	4-5- Tom

Sweetgrass = 6 = 308

SW/swtgrass.f95

DEPARTMENT OF
ENVIRONMENTAL QUALITY

Waste Management Division
Solid Waste Program
406/444-1430

FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA

MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

April 5, 1996

Ron Thomas
City of Big Timber
P.O. Box 416
Big Timber, Montana 59011

RE: **BIG TIMBER CLASS II LANDFILL, SWEET GRASS COUNTY - LICENSE NO. 308**
RECEIPT OF JANUARY 1996 (FALL 1995) GROUND WATER MONITORING RESULTS, WITH NEW MONITORING WELL INSTALLATION (BT-7)

Dear Mr. Thomas:

On March 29, 1996 the Program received the results from the January 16, 1996 (i.e., Fall/1995) ground water monitoring event conducted at the Big Timber Class II landfill. The installation of monitoring well BT-7 has been very beneficial to the overall ground water monitoring network at this site.

Monitoring Well Completion Forms, etc.
Please note, ground water monitoring well information must be reported on Department approved forms [ARM 17.50.707(11)]. Refer to the attachment.

Ground Water Level Measurements
According to the water level elevation data provided in Appendix B of the report, water level measurements were recorded on January 16, 1996 for BT-3, BT-4, BT-5, BT-6, and BT-7. Apparently, several of the wells were omitted from the listing in the text. Please review and revise the text of this report on pages 1 and 5, as appropriate.

Sampling Schedule
The year of monthly water level information has shown very little fluctuation. With previous sampling events appearing to follow no specific biannual pattern (e.g., October 1994, April 1995, January 1996), please provide the biannual sampling schedule that will be followed in the future.

Statistical Analysis

Please note, according to ARM 17.50.708(11), it is the responsibility of the owner/operator to have a sufficient number of independent samples from each well to establish ground water quality using appropriate statistical procedures. The Program realizes that this could be an economic hardship for Big Timber. Therefore, the Program will agree to the normal sampling schedule (biannual) in order to acquire a sufficient data population. However, if any constituents are detected at or above the ground water protection standards during this time, an increased sampling frequency will be necessary.

Ground Water Monitoring Well Network Approval

With the recent installation of BT-7, the Program will approve the monitoring well network (i.e., BT-1S, BT-2, BT-6, and BT-7) for the existing disposal area. We appreciate your efforts to comply with the necessary ground water monitoring requirements.

Sincerely,

Pat Potts
Environmental Specialist

attachment: Monitoring Well Completion Form
Monitoring Well Development Form

cc: Kevin Hutchins, City of Big Timber (as above)
Rod Fink, Courthouse, Box 111, Columbus, MT 59019
Mayor James A. Devenny, City of Big Timber, P.O. Box 416, Big Timber, MT 59011

path: sw\swtgrass.f95
file: Sweet Grass Co./Big Timber/grd wtr (corr)

Initials [redacted] Date 9/19/95

SOLID WASTE PROGRAM ROUTE SLIP

☐ **NEW APPLICATION** — Initial / Date

Jim W. _____
Jon D. _____
Proof _____
Cathy _____
Roger _____

☐ **NEW LICENSE** — Initial / Date

Jim W. _____
Jon D. _____
Proof _____
Carol _____
Cathy _____
Roger _____

☐ **HEALTH OFFICER CARD** — Initial / Date

Jim W. _____
Carol _____
Cathy _____
_____ _____

☐ **INSPECTIONS** — Initial / Date

Pat C. _____
Jon D. _____
Proof _____
Carol _____
Roger _____

☐ **INTERIM CLOSURES** — Initial / Date

Jim W. _____
Jon D. _____
Proof _____
Carol _____
Cathy _____
Roger _____

☐ **CLOSURES** — Initial / Date

Jim W. _____
Jon D. _____
Proof _____
Carol _____
Cathy _____
Roger _____

☐ **CHANGE IN LICENSE FOR FEE STATUS** — Initial / Date

Jim W. _____
Jon D. _____
Proof _____
Cathy _____
Roger _____

☐ **COMPLAINTS** — Initial / Date

Pat C. _____
Jon D. _____
Proof _____
Roger _____
Carol (filing & DBase) _____

☐ **GENERAL CORRESPONDENCE** — Initial / Date

Pat C./Jim W. _____
Jon D. _____
Proof _____
Roger _____

☑ **~~MISCELLANEOUS~~** Grd Wtr — Initial / Date

~~Proof~~ _____
~~Pat C.~~ _____
Jon D. JD 9/20
Roger T RCT

mailed Tom 9-21

9/19/95
sw\swtgrss.vis

DEPARTMENT OF
ENVIRONMENTAL QUALITY

Waste Management Division
Solid Waste Program
406/444-1430

FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA

MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

September 20, 1995

Ron Thomas
City of Big Timber
P.O. Box 416
Big Timber, Montana 59011

RE: **BIG TIMBER CLASS II LANDFILL, SWEET GRASS COUNTY - LICENSE NO. 308** SITE VISIT

Dear Mr. Thomas:

On September 13, 1995 I visited the Big Timber Class II Landfill. I was given directions by the attendant to access the general vicinity of the down gradient and cross gradient ground water monitoring wells. The proposed monitoring well location to the west-southwest will be beneficial in determining if landfill activities at the site have impacted the natural quality of the ground water, or will do so in the future (i.e., monitoring during closure and post closure periods). Data from this new well will also provide information for determining the potential for off-site impacts to the ground water from the landfill.

At the time of my visit, the site appeared to be well managed and operating within State regulations. A pile of scrap metal east of the active trench and a large pile of untreated wood and brush were being handled according to normally approved operations and maintenance standards for such materials.

The Department has been contacted by the City with regard to the possibility of closing the Big Timber Class II Landfill. After our telephone conversation on September 19, 1995, it does not sound as though closure of the landfill will occur within the next year or so.

I am sorry I did not have time to meet you on this trip, but my visit to the landfill was unplanned and very brief. Please thank the attendants for their cooperation.

Sincerely,

Pat Potts

Pat Potts
Environmental Specialist

CC: Kevin Hutchins, City of Big Timber (as above)
Rod Fink, Courthouse, Box 111, Columbus, MT 59019
Mayor James A Devenny, City of Big Timber, P.O. Box 416, Big Timber, MT 59011

path: sw\swtgrss.vis
file: Sweet Grass Co/Big Timber II/grd wtr (corr)

LANDFILL ROUTE SLIP

☐ NEW APPLICATION — Initial / Date
- Jim W. _____
- Jon D. _____
- Michelle (proof) _____
- Cathy _____
- Roger _____

☐ NEW LICENSE — Initial / Date
- Jim W. _____
- Jon D. _____
- Michelle (proof) _____
- Carol _____
- Cathy _____
- Roger _____

☐ HEALTH OFFICER CARD — Initial / Date
- Jim W. _____
- Carol _____
- Cathy _____
- Michelle _____

☐ INSPECTIONS — Initial / Date
- Pat C. _____
- Jon D. _____
- Michelle (proof) _____
- Carol _____
- Roger _____

☐ INTERIM CLOSURES — Initial / Date
- Jim W. _____
- Jon D. _____
- Michelle (proof) _____
- Carol _____
- Cathy _____
- Roger _____

☐ CLOSURES — Initial / Date
- Jim W. _____
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- Roger _____

☐ CHANGE IN LICENSE FOR FEE STATUS — Initial / Date
- Jim W. _____
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- Cathy _____
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☐ COMPLAINTS — Initial / Date
- Pat C. _____
- Jon D. _____
- Michelle (proof) _____
- Roger _____
- Carol (filing & DBase) _____

☐ GENERAL CORRESPONDENCE — Initial / Date
- Pat C./Jim W. _____
- Jon D. _____
- Michelle (proof) _____
- Roger _____

☐ MISCELLANEOUS GW — Initial / Date

Proof	CL 6-13
~~Pat C.~~	~~PPC~~ 6-14
~~Jim W.~~	JD 6-14
~~Roger T.~~	

sw/swtgrass.mwn

DEPARTMENT OF
ENVIRONMENTAL QUALITY
Waste Management Division
Solid Waste Program
406/444-1430
FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA
MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

July 18, 1995

Ron Thomas
City of Big Timber
P.O. Box 416
Big Timber, Montana 59011

RE: **BIG TIMBER CLASS II LANDFILL, SWEET GRASS COUNTY - LICENSE NO. 308**
GROUND WATER MONITORING NETWORK

Dear Mr. Thomas:

For the required semi-annual Spring 1995 ground water sampling event at the Big Timber Class II Landfill, the Department agreed to reduce the number of monitoring wells originally sampled (7 wells) at this facility, concentrating on monitoring points more directly related to the active waste disposal area (3 wells). The existing waste disposal area is a north-south trench at least ten feet deep, located adjacent and parallel to the west facility property boundary.

The Big Timber Class II Landfill has been actively taking Group II waste following the baseline ground water sampling event conducted on December 17, 1991. Since then, waste disposal has been confined to this north-south trench which is approximately 275 feet east of the west property boundary. This trench is being filled from the north to the south. The primary direction of ground water flow, according to water level elevations from other monitoring wells on the site, is to the southwest.

ARM 16.14.704(2) states that a facility required to monitor the ground water must have at least two monitoring wells located down gradient from the waste disposal area. At the present time, the Big Timber Landfill has only one down gradient monitoring well (BT-6) from the existing disposal trench. This well is located approximately 250 feet south of the southerly edge of the disposal trench.

The Department has strongly requested that a monitoring well be installed at the relevant point of compliance (RPOC)/west property boundary, possibly near the methane monitoring probe, BTM-1. This original request was made in a letter from the Department dated April 12, 1995.

With the sincere expectation of this additional monitoring well being installed by the Fall 1995 sampling event, the Department has already significantly decreased the number of monitoring wells required to be sampled semi-annually at this facility, as long as operations remain in this first trench.

With regard to BT-1S and BT-1D, a nested pair of ground water monitoring wells located approximately 350 feet from the southeast corner of the trench; these wells are in a ground water flow location lateral to this first disposal trench. As recommended by the Department, the shallow penetration in this nested pair of wells should be sampled in lieu of an actual second down gradient well; however, this alternative cannot continue to meet the minimum requirement of two down gradient monitoring wells indefinitely.

Water in the subsurface (i.e., ground water) does not flow in a straight line as might be indicated on a map for simplicity sake. There are many heterogeneities, both physical and chemical in the subsurface that may cause ground water flow to deviate from the direct down gradient pathway one might assume. Transverse diffusion, chemical adsorption, permeability barriers or variations in the transmissivity of subsurface medium(s) through which the ground water may flow are all natural variabilities that can effect a hypothetical flow path direction.

Therefore, the Department would like to emphasis the need for the installation of an additional down gradient monitoring well on the west side of the active disposal area.

If you have additional questions or concerns, please give me a call.

Sincerely,

Pat Potts

Pat Potts
Environmental Specialist

cc: Kevin Hutchins, City of Big Timber (as above)
Rod Fink, Courthouse, Box 111, Columbus, MT 59019
Mayor James A. Devenny, City of Big Timber, P.O. Box 416, Big Timber, MT 59011

path: sw\swtgrass.mwn
file: Sweet Grass Co./Big Timber/grd wtr (corr)

ROUTE SLIP

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

TO: Roof YW DATE: 4/10/95

1. Pat C FYC

2. Jim W FYC Jon D

3. Roger T FYC

☑ Approval	☐ Comment	☐ Necessary Action
☐ Note and Return	☐ Note and File	☐ Investigate
☐ Prepare reply	☐ Signature	☐ See Me
☐ As requested	☐ For your information	☐ Per Conversation

REMARKS:

sw\swtgrass.f94

FROM: P3

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES

Waste Management Division
Solid Waste Program
406/444-1430
FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA

MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

April 12, 1995

Ron Thomas
City of Big Timber
P.O. Box 416
Big Timber, Montana 59011

RE: **BIG TIMBER CLASS II LANDFILL, SWEETGRASS COUNTY - LICENSE NO. 308**
REVIEW AND COMMENTS ON THE FALL 1994 GROUND WATER MONITORING AND SAMPLING RESULTS

Dear Mr. Thomas:

In preparation for the required semi-annual Spring 1995 ground water sampling event at the Big Timber Class II Landfill, the Department would like to briefly comment on several points with regard to the previous October/Fall 1994 ground water sampling event that could prove to be beneficial in future sampling events.

EQUIPMENT/RINSATE BLANK
* If the monitoring wells being sampled do not have dedicated downhole pumps for purging the wells and sampling, an equipment blank should be included with each sampling event as part of the general quality assurance/quality control procedures. An equipment blank, sometimes referred to as a rinsate blank is important to determine if the decontamination procedures employed are adequate, so that there is no cross contamination between wells.

DUPLICATE SAMPLE ANALYSES
* Although no VOCs were detected in the ground water samples in the October 1994 event, the trace level of cadmium detected in monitoring well BT-6, the more proximal hydraulically down gradient well to the active waste disposal unit, should continue to be closely observed in future sampling events.

NOTE: Duplicate samples were collected from BT-6. Unfortunately, the laboratory analysis for the duplicate was just for VOCs. No inorganic (metals, water quality parameters) analyses were duplicated. A full suite of analyses may have helped to confirm the credibility of the cadmium detection in

the original sample. The Department advises that duplicates be analyzed for all required parameters/constituents.

ADDITIONAL GROUND WATER MONITORING WELL

* Although some re-contouring of the ground water elevation data has been done by the Department (see attached map), the primary direction of flow is to the southwest. It is also important to address the secondary components of flow. Ground water contamination generally does not emanate from a source in a straight line, but diffusion/dispersion of the contaminants occurs transverse to the primary ground water flow direction. BT-1S is an example of a monitoring well location designed to address the more southerly component of the dispersive flow. The importance of monitoring the westerly component is two-fold. The active disposal trench is more proximal (less than 300 feet) to the west property boundary, and this area has been subdivided. At least one private residence already exists west of the site. Refer to the attached map for exact proposed location for the well.

The Department views this requirement of an additional ground water monitoring well to be located along the west property boundary as being necessary for the protection of human health and the environment. In turn, the Department sees no further reason for sampling all of the existing monitoring wells at this site at this time until expansion into the additional disposal units is proposed. The October 1994 sampling event could serve as baseline water quality values in these more remote wells, whenever future expansion is intended.

Therefore, the Department will only require that the following wells be sampled on a semi-annual basis: BT-2 (background), BT-1S, BT-6, and the new well. Ground water levels should always be measured in all of the wells for each sampling event. This not only provides information on water levels and ground water gradient fluctuations, but it also provides the operator with an opportunity to inspect all of the wells at the surface in the event that maintenance/repairs are needed.

As the Spring 1995 ground water sampling event is fast approaching, it is unrealistic for the Department to expect Big Timber to install this additional monitoring well on so short of a notice. However, the Department has discussed this location in the past with the City.

In an effort to allow sufficient time for scheduling of a drilling rig, and to budget the cost of this well into the program, the Department will permit the Big Timber Class II Landfill to install the new well during this summer, so that it will be ready to sample

with the three existing wells for the Fall 1995 ground water sampling event.

If you have any questions, please give me a call.

Sincerely,

Pat Potts
Environmental Specialist

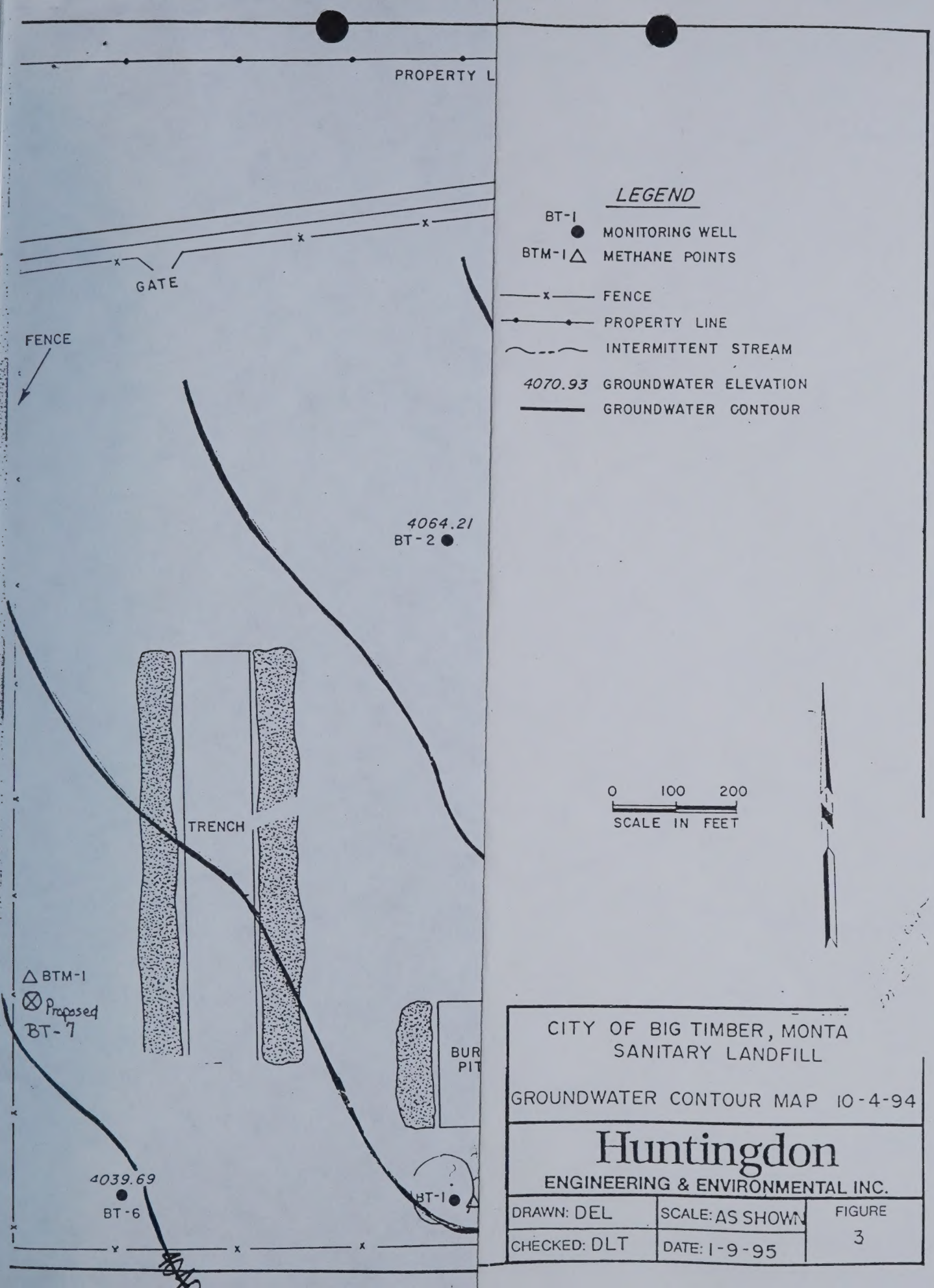
Attachment - Ground water contour map

cc: Kevin Hutchins, City of Big Timber (as above)

Rod Fink, Courthouse, Box 111, Columbus, MT 59019

Mayor James A. Devenny, City of Big Timber, P.O. Box 416, Big Timber, MT 59011

path: sw\swtgrass.f94
file: Sweetgrass Co./Big Timber/grd wtr (corr)



CITY OF BIG TIMBER, MONTA
SANITARY LANDFILL

GROUNDWATER CONTOUR MAP 10-4-94

Huntingdon
ENGINEERING & ENVIRONMENTAL INC.

DRAWN: DEL	SCALE: AS SHOWN	FIGURE 3
CHECKED: DLT	DATE: 1-9-95	

PROPERTY LINE

HOWIE ROAD

FENCE

GATE

FENCE

4064.21
BT-2 ●

△BTM-4

4071.93
● BT-4

△ BTM-3

4070

TRENCH

BURN PIT

4060

△ BTM-1
⊗ Proposed
BT-7

4053.21
● BT-5

4055.63
● BT-3

4050

4039.69
BT-6

BT-1 ● △ BTM-2

FENCE

LEGEND

- BT-1 ● MONITORING WELL
- BTM-1 △ METHANE POINTS
- —x— FENCE
- —•— PROPERTY LINE
- ~ - - ~ INTERMITTENT STREAM
- 4070.93 GROUNDWATER ELEVATION
- ——— GROUNDWATER CONTOUR

0 100 200
SCALE IN FEET

CITY OF BIG TIMBER, MONTA
SANITARY LANDFILL

GROUNDWATER CONTOUR MAP 10-4-94

Huntingdon
ENGINEERING & ENVIRONMENTAL INC.

DRAWN: DEL	SCALE: AS SHOWN	FIGURE 3
CHECKED: DLT	DATE: 1-9-95	

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES
Waste Management Division
Solid Waste Program
406/444-1430
FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA
MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

September 2, 1994

Kevin J. Hutchins
City of Big Timber Landfill
PO BOX 416
Big Timber, MT 59011

Dear Mr. Hutchins:

I have reviewed the additions to the Big Timber Landfill's Plan of Operations as proposed in your letter of June 2, 1994 and have the following comments:

Waste Screening Plan

The Plan as proposed meets the regulatory requirements for the waste stream anticipated at the landfill. Please remember that all of the waste screening records should be made a part of your operating record and be available for review during Department inspections.

Methane Monitoring

The regulatory requirements for methane monitoring are 25% of the LEL in facility structures and 100% of the LEL at the property boundary. Since the requirements also include that the monitoring be based on site soils, hydrogeology, potential pathways, potential barriers, water levels, and the structures and property boundaries (i.e. distance to the boundary and then the distance to other persons). The methane monitoring plan should include:

1. A map depicting the proposed locations for methane monitoring should be supplied to the Department for approval. This map should show the location of any nearby structures as well as facilities at the landfill.

2. Depth of the proposed probe locations. The methane monitoring points must be located based on the depth to the water table and the depth of any nearby refuse as well as the pathways (like sand lenses) and barriers (such as frost in the winter). The geology at the Big Timber site is such that the water beneath the landfill is mostly in what is called a confined aquifer. This indicates that most of the methane migration pathways should be above this level. Special attention should be paid to shallow sand lenses that are intercepted by the trenches at the landfill.

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES
Waste Management Division
Solid Waste Program
406/444-1430
FAX # (406) 444-1499

STATE OF MONTANA

OFFICE LOCATION: 2209 PHOENIX AVE. HELENA, MONTANA
MAILING ADDRESS: PO BOX 200901 HELENA, MT 59620-0901

September 2, 1994

Kevin J. Hutchins
City of Big Timber Landfill
PO BOX 416
Big Timber, MT 59011

Dear Mr. Hutchins:

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3. Suggested locations include on the fence line due West of the current trench, by the gate, and on the fence line due south of the trenches.

4. Culverts should be sampled. Methane/CO_2 mixtures are heavier than air and tend to accumulate in low lying areas.

5. The make and model of the methane meter selected should be supplied to the Department. It should be calibrated with an appropriate methane gas mixture and operated according to the manufacturer's instructions.

I am enclosing a copy of a simple methane plan from Valley County for your information.

Leachate Collection System

The leachate collection system must be operated so that no more than 1 foot accumulates prior to removal. The use of the same probe to measure water levels in the leachate system and the ground water monitoring wells is strongly discouraged. One accidental cross contamination will more than nullify any cost savings of not using dedicated equipment. A simpler method, such as the use of a series of 1 inch PVC pipe sections to probe the leachate riser might be just as effective and cheaper.

The design of the current cell's leachate collection system does not meet the new requirements of Department regulations adopted as a result of the EPA's Subtitle D rules. The next cell (trench) will require a liner and leachate collection system that meets the requirements of ARM 16.14.506. Unfortunately, the Department is not in the landfill design business and will only be able to review designs presented to insure that they meet the regulatory requirements. I would urge you, if you will be continuing to use the landfill beyond the life of the current cell, to begin the design process at least a year in advance of the need for additional space. The design, bidding, and construction may take longer than anticipated. Design requirements are specified in ARM 16.14.506.

Ground Water Monitoring

There appears to be some confusion regarding the status of ground water monitoring at the Big Timber Landfill. As Patricia Potts stated in her letter of April 19, 1994, the seven wells present at the site are adequate to provide for the initial hydrogeological characterization of the site but are not necessarily adequate as a monitoring network. In that letter she also said that Big Timber should immediately begin monthly water level measurements so that an assessment of the flow direction could be made in August and a determination of the adequacy of the existing well placement could be

made prior to October 9, 1994. Since these measurements were not performed, the Department does not have the additional information required to make a decision on these matters. Please commence the required monthly water level measurements at once.

One of the primary reasons for sampling all seven wells was the ability to create a sufficient population of samples for the required statistical evaluation of sampling results. The lack of water level measurements may require that the Department, instead of being able to evaluate a proposed monitoring network, may have to require that a second round of sampling be conducted on all seven wells again in the spring, rather than concentrating the sampling on a reduced number of properly located wells. Please consult with Huntingdon Chen-Northern on the groundwater data analysis required by ARM 16.14.706(12).

A sampling and analysis plan for the landfill is also required. For the first event, the Standard Operating Procedures used by Huntingdon will suffice as this firm has been active at several landfills in Montana and is familiar with Department regulations. They can advise you on the requirements of ARM 16.14.706(1).

Closure Plan

For the time being, the Department has accepted the closure plan as presented on Plan Sheet 4 of 9. "Final Contour Plan" of the Damschen and Associates plans for the landfill dated February 1990. This design may have to change as the Big Timber Landfill progresses to lined cells. The permeability of the final cover infiltration layer must contain a minimum 18 inches of earthen material and have a permeability less than or equal to the permeability of any bottom liner, barrier layer, or natural subsoils present, or a permeability no greater than 1×10^{-5} cm/sec, whichever is less. I would also call your attention to the construction QA/QC requirements of final cap design specified in ARM 16.14.506(12). The requirements normally require the services of a professional engineer.

The closure of landfill units must be completed within 180 days of the start of closure activities. The unit must be revegitated within one year. The vegetation of closed areas should be done with a grass mix approved by the Soil Conservation Service for the area.

A notation must be placed on the deed to the property indicating that it was used as a landfill.

An estimate of the cost of a third party to close the largest area of the landfill requiring final closure (and proof of the financial mechanism to provide for the closure) must be provided to the Department by April 9, 1994. This estimate must be annually updated and appropriately funded. Must Montana towns do not have the

financial depth to provide the required financial assurance without setting up a dedicated trust fund. Financial assurance requirements are delineated in ARM 16.14.540.

A 30 year post closure care period is also required. These requirements are specified in ARM 16.14.531(1) and include:

(a) Following closure of each Class II landfill unit, the owner or operator must conduct post-closure care. Post-closure care must be conducted for 30 years, except as provided under (b) of this subsection, and consist of at least the following:

(i) Maintaining the integrity and effectiveness of any final cover, including making repairs to the cover as necessary to correct the effects of settlement, subsidence, erosion, or other events, and preventing run-on and run-off from eroding or otherwise damaging the final cover;

(ii) Maintaining and operating the leachate collection system in accordance with the requirements in ARM 16.14.506. The department may allow the owner or operator to stop managing leachate if the owner or operator demonstrates that leachate no longer poses a threat to human health and the environment;

(iii) Monitoring the ground water in accordance with the requirements of ARM Title 16, chapter 14, subchapter 7, and maintaining the ground water monitoring system, if applicable; and

(iv) Maintaining and operating the gas monitoring system in accordance with the requirements of ARM 16.14.521.

Following the thirty year post closure care of the unit, a certification by a P.E. must be submitted to the Department.

<u>Run-off control and the Montana Pollution Discharge Elimination System (MPDES) Permit</u>

Barry Damschen sized the run-off detention pond to handle the 24 hour, 25 year precipitation event. This meets current requirements. Your Operations Plan should also reflect a commitment to use appropriate Best Management Practices (BMP's) to eliminate possible point and non-point sources at the landfill. I have attached a copy of the EPA suggestions on BMP's at landfills for your reference.

Because the Big Timber Landfill pond design includes two potential discharge points, the spillway and the pipe, it will also require a Stormwater Discharge Permit from the Water Quality Division. Please contact Roxanne Lincoln at 444-5338 for the appropriate application form.

I hope this review of your submittal has been helpful. We understand that landfill operations under the new rules required by the EPA is

much more complex than before. If we can be of further help, please feel free to contact any of us at the Solid Waste Program.

Sincerely,

F. Patrick Crowley
Solid Waste Regulatory Lead

Enclosures: Valley County Methane, EPA BMP's

Big Timber ~~Twin Bridges~~

File:~~Twin Bridges~~ Landfill\Sweet Grass County
Path:H:\cb5403\wp\landfill\BIGT.OPS

June 2, 1994

Department of Health and
Environmental Sciences,
Solid and Hazardous Waste Bureau
Helena, MT 59620

Re: Operation plan additions.

Dear Sirs,

Enclosed you will find the information you requested. The City understands that this is the first draft of the proposed operational plan changes. Any changes or ideas from your department will be appreciated.

I would like to thank Lora Dando for her time and understanding, Jim Wilbur for his willingness to face the mis-informed citizens of Big Timber, and Pat Crowley for his simplistic explanation of the rules and regulations.

I am sure I will hear from you soon.

Sincerely,

Kevin J. Hutchins

Kevin J. Hutchins

RECEIVED
JUN 0 3 1994
MONTANA DEPARTMENT OF HEALTH
AND ENVIRONMENTAL SCIENCES

WASTE SCREENING

Big Timber has in place a waste screening program during the regular day to day operations of the Solid Waste Department. The Solid Waste personnel come into actual physical contact with all residential waste generated within the city limits. The Solid Waste personnel will accept liquid wastes from residential customers, with certain restrictions. These restrictions include:

1. Paint
   a. two gallons maximum per stop
      1. the city would prefer the lids on the cans be removed for 3-4 days to allow the VOC's to escape.

2. Used crankcase oil
   a. one gallon maximum in clear milk jug.

3. No 5 gallon container of any liquid will be accepted.

COMMERCIAL CUSTOMERS

Most commercial customers are picked up on a by the can basis therefore the city personnel can monitor the waste as it is being dumped into the truck. Any questionable waste is removed and the business owner is notified.

Presently, Big Timber is home to one of Montana's finest firearms manufacturers, Shiloh Rifle Company. The rifle company uses water soluble lubricating oil on their machines, and also uses a spinner to reclaim cutting oil from their metal filings.

Big Timber's garages and service stations either use their crankcase oil as fuel for heaters or contract to have the oil removed. All oil filters are punctured and drained before entering the waste stream.

AT THE LANDFILL

Customers at the landfill generally bring refuse to the landfill in the back of a pick-up. The city personnel inspect each load before it is dumped at the working face.

The Big Timber landfill has very few loads that are larger than pick-up size. These loads are generally dump truck and stock truck size. The larger loads are inspected after being dumped at the working face.

City personnel continue to inspect all refuse at the working face during the compaction and burying procedure.

The city will construct a simple waste screening pad following the guidelines on page 37 figure 7 of the Waste Screening at Municipal Solid Waste Management Facilities guidebook. This pad will be used for all questionable loads that enter the landfill.

If the city personnel find any waste that is unacceptable, we will contact the department of Health and Environmental Sciences, Solid and Hazardous Waste Bureau, and we will also contact Chen-Northern, Inc.

METHANE MONITORING

Landfill gas (LFG), produced during biodegradation of the waste can migrate through soils. Methane and Carbon Dioxide are the primary constituents. Methane is explosive and can collect in buildings or other confined spaces. Methane is explosive at concentrated levels between five percent (LEL) and fifteen percent (UEL) in air.

Methane is lighter than air and tends to rise through refuse or soil and vent into the atmosphere. A portable methane gas meter will be used to measure the concentration 4 times per year in facility structures, in leahcate riser, and at the facility property boundaries.

The Big Timber landfill operators will ensure that the concentration of methane gas generated by the facility does not exceed 25% of the lower explosive limit for methane at those areas that are monitored.

Need map of l.f. showing proposed locations.

1) What meter will be used. (Methane carbonate)

2) Quarterly monitor.

3) 100% LEL required —

Send.

LEACHATE COLLECTION SYSTEM

Purpose

The leachate collection system is designed to collect and convey leachate from the bottom of each pit. A series of perforated pipes are used for this purpose.

In order to detect and collect any leachate that may be generated in the most effective and economical method possible, the operation plan has been developed such that the base elevation of the various trenches slope in a down gradient direction toward the south side of the landfill.

Installation

Filter fabric was placed in the 3:1 slope trench for the leachate pipe.

A layer of coarse aggregate was placed over the fabric, then the pipe was put in. Another layer of coarse aggregate was placed over the pipe, and geo textile fabric was put down to help stop migration of waste and clay particles through the coarse aggregate that may clog the collection pipes.

Cleanout Risers

Cleanout risers are located on the west side of the trench and out of the fill area. The riser is protected by a six foot piece of steel pipe to help guard against accidental damage by landfill equipment.

Monitoring

The city personnel will check monthly for any leachate in the collection system. If leachate is found in sufficient quantities to cause alarm the city will contact the Department of Health and Environmental Sciences, Solid and Hazardous Waste Bureau and Chen Northern Inc.

The leachate riser is equipped with a steel cap that is padlocked at all times. After testing for leachate in the collection system, the probe must be cleaned to prevent the contamination of any groundwater monitoring wells. The probe will be used to measure the groundwater monitoring wells, also. The cleaning or decontaminating will be done per manufacturer's instructions.

GROUNDWATER MONITORING

The Big Timber landfill currently has 7 monitoring wells. The city will have all 7 of those wells tested for the required list of parameters/constituents listed in Table 1 of ARM 16.14.706. Upon the department's recommendation, the lab will also check for dichlorodifluoromethane in the down-gradient wells.

The city will also initiate a program for measuring water levels in all of the existing wells on a regular monthly basis. This program would coincide with the leachate collection system check.

The city understands this information will be instrumental in determining which wells will be included in the approved monitoring network, and if any additional wells will be needed.

With this information the city will establish a regular schedule for the required semi-annual ground water sampling. This sampling will coincide as closely as possible with high and low water periods during the year.

The firm of Chen-Northern, Inc. did the initial testing of all the wells and in all probability will do any subsequent testing. The city will advise Chen-Northern that the Department requires a Statement of Qualifications before any testing is done.

CLOSURE PLAN

Closure of filled trenches will be the responsibility of the City of Big Timber. Closure activities described below will take place sequentially as areas of the site are brought to final grades.

Closure of Filled Areas

The Big Timber operation plan is to close off a portion of the cell as the filling operation progresses. Final Closure will begin within 30 days after receiving the last shipment of waste. Final closure will be proceeded by contacting the Montana Department of Health and Environmental Sciences, Solid and Hazardous Waste Division before closure activities begin.

Closure will consist of placing a buffer soil layer, installing a clay barrier layer, placing eighteen inches of cover soil and six inches of topsoil and seeding with native grasses.

Access to the site following final closure will be controlled by providing a locked gate. The fence surrounding the property will be maintained.

The City personnel will make a monthly check for any erosion problems and take corrective action if needed.

Sweet grass

ROUTE SLIP

DEPARTMENT OF HEALTH & ENVIRONMENTAL SCIENCES

TO: Prod Sec DATE: 4/19/94

1. Jim JW ~~FM~~
2. Jon JD
3. ~~Roger~~

☑ Approval	☐ Comment	☐ Necessary Action
☐ Note and Return	☐ Note and File	☐ Investigate
☐ Prepare reply	☐ Signature	☐ See Me
☐ As requested	☐ For your information	☐ Per Conversation

REMARKS:

sw/ swtgrass. grd

Route quickly please. This needs to go w/ Lara tomorrow.

Original hand carried. mailed 4-20-94 lr

FROM: P 3

DEPARTMENT OF
HEALTH AND ENVIRONMENTAL SCIENCES
Solid and Hazardous Waste Bureau
Solid Waste Program
MARC RACICOT, GOVERNOR 406/444-1430
FAX # (406) 444-1499
STATE OF MONTANA
OFFICE LOCATION 836 Front Street Helena, Montana
MAILING ADDRESS: PO BOX 200901 Helena, MT 59620-0901

April 19, 1994

Ron Thomas
City of Big Timber
P.O. Box 416
Big Timber, Montana 59011

RE: **BIG TIMBER CLASS II LANDFILL, SWEETGRASS COUNTY - LICENSE NO. 308**
GROUND WATER MONITORING AND SAMPLING REQUIREMENTS

Dear Mr. Thomas:

The Big Timber Landfill is classified by the Montana Department of Health and Environmental Sciences, Solid Waste Program (the Department) as an existing Class II landfill that serves a geographic area with a population of less than 5,000 people. According to the Administrative Rules of Montana (ARM) 16.14.701(2)(c)(i) which became effective on October 9, 1993, the Big Timber Class II Landfill will be required to have an **approved ground water monitoring network operational by October 9, 1994**.

The Department has reviewed the hydrogeology and ground water monitoring information that has been submitted on this site, to date. These hydrogeologic documents consist of the following: hydrogeologic portion of the "Operation Plan and License Application" dated February 1990, and a "Report of Additional Hydrogeologic Investigations Proposed by Big Timber Landfill Site, Big Timber, Montana" dated August 3, 1990. The hydrogeologic characterization of this area, and this site is accurate and adequate, and will be sufficient to meet the ARM 16.14.703 requirements.

The 7 ground water monitoring wells (6 shallow completions, and one dual, deep completion) that were installed from May through September of 1989 and in July of 1990 at this site, do a satisfactory job of characterizing the site. The Department suggests that by sampling all 7 of the existing ground water monitoring wells, Big Timber would have a current update/re-evaluation of the quality of the ground water at this site, since the monitoring wells were intially sampled (one time) in October 1991. **The Department will require that all 7 monitoring wells be sampled prior to October 9, 1994 for the required list of parameters/constituents listed in Table 1 of ARM 16.14.706.** A brief Sampling and Analysis Plan [see ARM 16.14.706(2)] will be required

to be submitted to the Department and approved before this ground water sampling activity may be conducted. Qualifications (resume) of the hydrogeologist/technican responsible for the sample collection, preservation, and chain-of-custody form will also need to be submitted to the Department for the files, if this person has not already done so previously [see ARM 16.14.705(6)(b)].

> NOTE: Although **dichlorodifluoromethane** is not a required volatile organic compound (VOC) in ARM 16.14.706 Table 1, the Department recommends that dichlorodifluoromethane be analyzed with the other VOCs. There is normally no additional charge for this constituent, if the laboratory is notified in advance. The physical and chemical properties of dichlorodifluoromethane (CFC-12) will allow this constituent to move at a rate similar to that of the natural rate of the ground water flow. It has been determined that detected levels of dichlorodifluoromethane in the ground water may be helpful in delineating the more rapidly moving/advancing hydraulically down gradient edge of a possible leachate plume.

It would also be very helpful for Big Timber to promptly initiate **measuring water levels in all of the existing wells on a regular monthly basis**. According to ARM 16.14.706(4) monthly water level measurements are required to be measured and recorded for a 1 year period to determine high and low water periods relevant to the scheduling of the required semi-annual sampling events. This information would also be quite helpful initially to re-establish/revise the current direction of ground water flow at the site.

It is also important to emphasize that regular **semi-annual sampling** [ARM 16.14.706(4)] according to ARM 16.14.706, and analyzing samples for a minimum of the required Table 1 parameters/constituents will be required of all monitoring wells in the **approved monitoring network**. An approved ground water monitoring network does not necessarily include all of the monitoring wells on the site, but may pertain to only those wells that afford the site the most efficient and economic means of monitoring the quality of the ground water beneath and emanating from the Solid Waste facility. It would appear from the potentiometric surface map that ground water flow is to the southwest. Usage of the existing hydrogeologic information and any additional current data that can be acquired at the site concerning ground water flow direction, rate of flow, and the quality of the ground water will be helpful in selecting those monitoring wells that will be critical to effective ground water monitoring at the site.

From the above requested current sampling and water level data to be collected at this site, the Department will be better able to evaluate the system for adequacy and determine if any further work and/or wells will be necessary to develop an effective ground water monitoring sytem for the site.

Enclosed is a brief outline for a proposed schedule to aid Big Timber in constructively organizing their ground water monitoring efforts to be in compliance on or before October 9, 1994. The Department realizes questions will arise concerning ground water monitoring as Big Timber becomes involved in a scheduled ground water monitoring program. If you would like to discuss any of the above items, or you have questions concerning implementation of an adequate ground water monitoring network, please give me a call.

Sincerely,

Pat Potts
Environmental Specialist

enclosure - Proposed Ground Water Monitoring Schedule for Big Timber Class II Landfill

cc: Kevin Hutchins, City of Big Timber (as above)
Rod Fink, Courthouse, Box 111, Columbus, MT 59019
Mayor James A. Devenny, City of Big Timber, P.O. Box 416, Big Timber, MT 59011

path: sw\swtgrass.grd
file: Sweetgrass Co./Big Timber II/grd wtr

PROPOSED GROUND WATER MONITORING SCHEDULE

FOR BIG TIMBER CLASS II LANDFILL

1. Have the qualified person or consulting firm Big Timber has selected to conduct sampling, possible eventual well installation, etc. submit a Statement of Qualifications to the Department, if they have not already done so in the past.

2. Submit a brief Sampling and Analysis Plan (SAP) to the Department for review and approval prior to conducting a ground water sampling event.

3. Collect ground water samples for laboratory analysis (Table 1) from all of the existing monitoring wells (7 wells), according to Standard Operating Procedures (SOPs) provided in the SAP.

4. Measure water levels on a regular monthly basis in all of the existing ground water monitoring wells.

5. Review the current ground water analytical results and map the direction of ground water flow from the new water level data measurements by August 1994.

6. Determine if additional work and/or an additional monitoring well is necessary at this time, and if so, where it will be specifically located by August-September 1994.

7. Define and have approved an appropriate ground water monitoring network for the Big Timber Class II Landfill by October 9, 1994.

8. Establish a regular schedule for the required semi-annual ground water sampling to coincide as closely as possible with high and low water periods during the year (e.g., May, December).

CLOSED
CITY OF BIG TIMBER LANDFILL
LICENSE NUMBER 308

MAXIM

OCTOBER 1996 GROUNDWATER MONITORING RESULTS

NOVEMBER 1996

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 8

RECEIVED 11/14/1996

CLOSED
CITY OF BIG TIMBER LANDFILL
LICENSE NUMBER 308

MAXIM

JANUARY 1996 GROUNDWATER MONITORING RESULTS

MARCH 1996

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 8

RECEIVED 3/29/1996

CLOSED
CITY OF BIG TIMBER LANDFILL
LICENSE NUMBER 308

HUNTINGDON

GROUNDWATER MONITORING RESULTS,
APRIL 1995

JULY 1995

IS LOCATED IN THE GROUNDWATER
MONITORING REPORTS ARCHIVE,
BOX NUMBER 8

RECEIVED 7/14/1995

Sweetgrass Co
Big Timber
Grd wtr (corr)

Huntingdon

Huntingdon Engineering & Environmental, Inc.
600 South 25th Street
P O Box 30615
Billings, Montana 59107

Telephone: (406) 248-9161
Fax: (406) 248-9282

April 27, 1995

Montana Department of Health and Environmental Sciences
Solid Waste Program
P.O. Box 200901
Helena, MT 59620-0901

RECEIVED
APR 28 1995
Montana Department of Health
and Environmental Sciences
Waste Management Division

ATTENTION: Ms. Pat Potts

SUBJECT: Nested Monitoring Wells BT-1S and BT-1D
Big Timber Sanitary Landfill
Big Timber, Montana
Huntingdon Project No. 94-657

Dear Ms. Potts:

Enclosed please find a graphic log of monitoring wells BT-1S and BT-1D. We have prepared this log at the request of Mr. Jay Graham of the City of Big Timber to illustrate the manner of completion of the wells. As you can see, the two wells are completed in the same borehole but their screened intervals are discreet and separated by a bentonite seal approximately 20 feet thick. Water samples collected from the two wells are clearly derived from separate and distinct aquifers.

We are happy to help clear up your confusion in this matter. If you have any further questions regarding the technical details of the installations at the Big Timber Landfill, please call us.

Sincerely,

Huntingdon Engineering & Environmental, Inc.

David L. Tyler

David L. Tyler, P.G.

DLT:dg

Enclosure

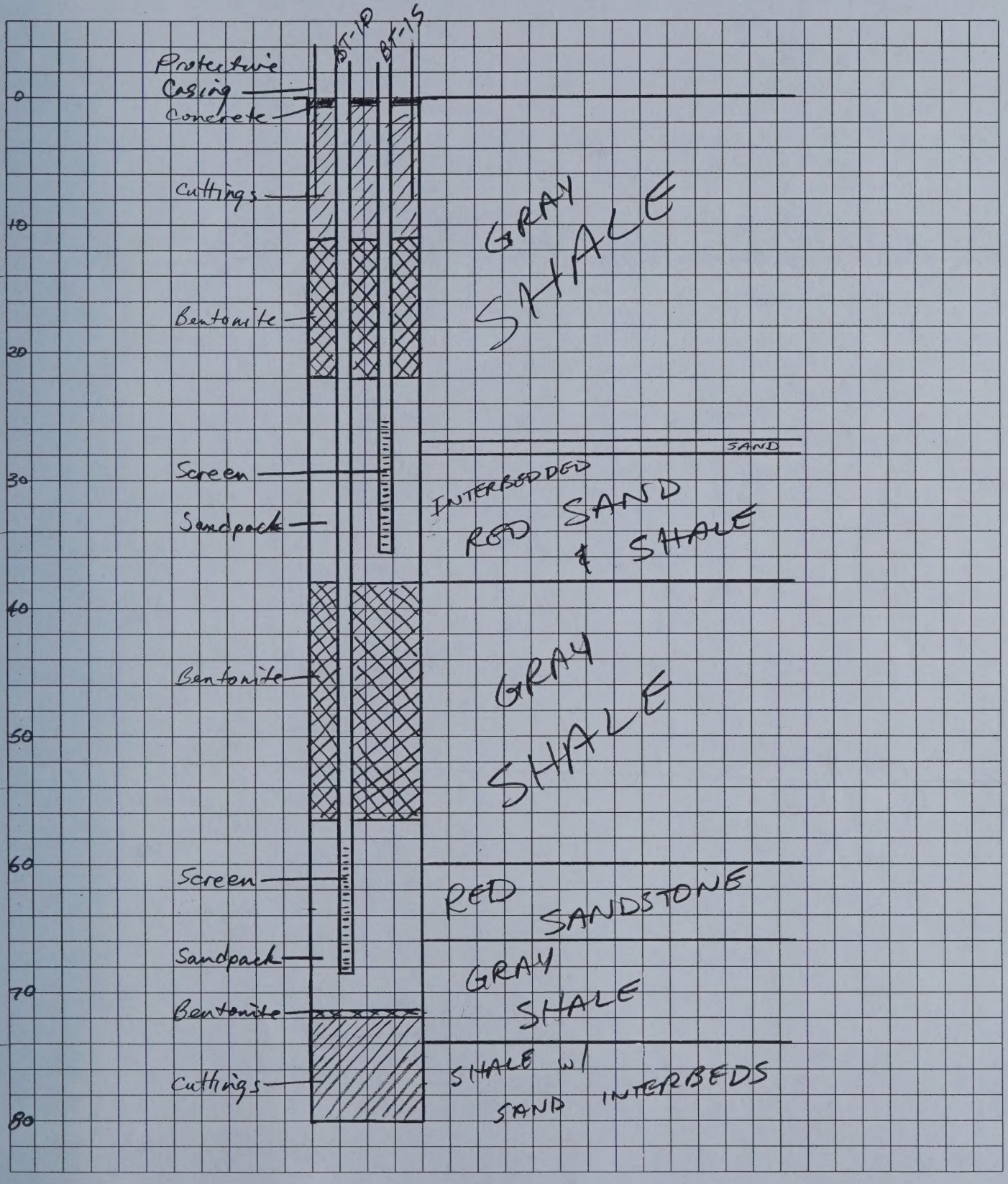
swp.ltr.n.envir.94657

BT-1S & 1D

Huntingdon
Consulting Engineers Environmental Scientists

JOB NO. 94-657 JOB TITLE Big Timber DATE 4-26-95 BY DLT

SUBJECT Schematic - well BT-1S+1D CHECKED _____ SHEET _____ BY _____



CLOSED
CITY OF BIG TIMBER LANDFILL
LICENSE NUMBER 308

HUNTINGDON

GROUNDWATER AND METHANE MONITORING RESULTS, OCTOBER 1994

JANUARY 1995

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 8

RECEIVED 1/17/1995

CLOSED
CITY OF BIG TIMBER LANDFILL
LICENSE NUMBER 308

DAMSCHEN & ASSOCIATES

RESULTS OF GROUND-WATER SAMPLES, SEPTEMBER 1991

DECEMBER 1991

IS LOCATED IN THE GROUNDWATER MONITORING REPORTS ARCHIVE, BOX NUMBER 8

RECEIVED 12/18/1991